Module 1
Practice Questions for Java

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Roll no: 25

1. WAP to demonstrate implicit type conversion and explicit type conversion.

```
public class TypeConversionDemo {
    public static void main(String[] args) {
        // Demonstrate implicit type conversion
        implicitConversion();

        // Demonstrate explicit type conversion
        explicitConversion();
    }
    // Implicit Type Conversion
    public static void implicitConversion() {
        int intVar = 10;
        double doubleVar = 5.5;
        // Implicit conversion: int to double
        double result = intVar + doubleVar;  // intVar is implicitly converted to double
        System.out.println("Implicit Conversion: " + intVar + " (int) + " + doubleVar + " (double) = " + result + "
(double)");
    }
    // Explicit Type Conversion
    public static void explicitConversion() {
        String stringVar = "123";
        int intVar = 456;
        // Convert String to int explicitly
        int stringToInt = Integer.parseInt(stringVar);
        // Adding integer values
        int result = stringToInt + intVar;
        System.out.println("Explicit Conversion: Integer.parseInt(\"" + stringVar + "\") = " + stringToInt +
                           ", " + stringVar + " (String) + " + intVar + " (int) = " + result + " (int)");
    }
}
```

```
/Users/shikhasingh/.zshrc:1: command not found: his
shikhasingh@Shikhas-MacBook-Air Assign1_stud %  /usr/bin/env /Users/shikhasingh/Library/Application\ Support/Code/User/globalStorage/pleiade
s.java-extension-pack-jdk/java/latest/bin/java --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/shikhasingh/Library/Appli
cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redhat.java/jdt_ws/Assign1_stud_e9720f3c/bin TypeConversionDemo

Implicit Conversion: 10 (int) + 5.5 (double) = 15.5 (double)
Explicit Conversion: Integer.parseInt("123") = 123, 123 (String) + 456 (int) = 579 (int)
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

2. WAP to find whether the inputted number is even or odd.

```
import java.util.Scanner;
public class EvenOddChecker {
    public static void main(String[] args) {
        // Create a Scanner object for user input
```

```
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter an integer
        System.out.print("Enter an integer: ");
        int number = scanner.nextInt();

        // Check if the number is even or odd
        if (number % 2 == 0) {
            System.out.println(number + " is even.");
        } else {
            System.out.println(number + " is odd.");
        }

        // Close the scanner
        scanner.close();
    }
}
```

```
shikhasingh@Shikhas-MacBook-Air Assign1_stud %  /usr/bin/env /Users/shikhasingh/Library/Application\
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cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redhat.java/jdt_ws/Assig
Enter an integer: 4
4 is even.
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

3. WAP to find greater among two numbers using conditional operator.

```
import java.util.Scanner;
public class GreaterNumberFinder {
    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter two numbers
        System.out.print("Enter the first number: ");
        int num1 = scanner.nextInt();

        System.out.print("Enter the second number: ");
        int num2 = scanner.nextInt();

        // Find the greater number using the conditional (ternary) operator
        int greater = (num1 > num2) ? num1 : num2;

        // Output the result
        System.out.println("The greater number is: " + greater);

        // Close the scanner
        scanner.close();
```

```
    }
}
```

```
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cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redhat.java/jdt_ws/Assign1_stud_e9720f3c/

Enter the first number: 34
Enter the second number: 45
The greater number is: 45
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

4. WAP to find greatest among three numbers using if else.

```
import java.util.Scanner;
public class GreatestOfThree {
    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter three numbers
        System.out.print("Enter the first number: ");
        int num1 = scanner.nextInt();

        System.out.print("Enter the second number: ");
        int num2 = scanner.nextInt();

        System.out.print("Enter the third number: ");
        int num3 = scanner.nextInt();

        // Initialize a variable to hold the greatest number
        int greatest;

        // Determine the greatest number using if-else statements
        if (num1 >= num2 && num1 >= num3) {
            greatest = num1;
        } else if (num2 >= num1 && num2 >= num3) {
            greatest = num2;
        } else {
            greatest = num3;
        }

        // Output the result
        System.out.println("The greatest number is: " + greatest);

        // Close the scanner
        scanner.close();
    }
}
```

```
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Enter the first number: 45
Enter the second number: 67
Enter the third number: 78
The greatest number is: 78
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

5. WAP to find sum and average of numbers from 1 to 10.

```
public class SumAndAverage {

    public static void main(String[] args) {
        // Initialize the sum variable
        int sum = 0;
        int count = 10; // Number of elements from 1 to 10

        // Calculate the sum of numbers from 1 to 10
        for (int i = 1; i <= count; i++) {
            sum += i;
        }

        // Calculate the average
        double average = (double) sum / count;

        // Output the results
        System.out.println("Sum of numbers from 1 to 10: " + sum);
        System.out.println("Average of numbers from 1 to 10: " + average);
    }
}
```

```
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s.java-extension-pack-jdk/java/latest/bin/java --enable-preview -XX
cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2
Sum of numbers from 1 to 10: 55
Average of numbers from 1 to 10: 5.5
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

6. Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.

```
import java.util.Scanner;

public class MultiplicationTable {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter a positive integer
        System.out.print("Enter a positive integer: ");
        int number = scanner.nextInt();

        // Check if the input is a positive integer
        if (number <= 0) {
            System.out.println("The number must be a positive integer.");
        } else {
            // Print the multiplication table for the entered number
            System.out.println("Multiplication table for " + number + ":");
            for (int i = 1; i <= 10; i++) {
                System.out.println(number + " x " + i + " = " + (number * i));
            }
        }

        // Close the scanner
        scanner.close();
    }
}
```

```
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Enter a positive integer: 22
Multiplication table for 22:
22 x 1 = 22
22 x 2 = 44
22 x 3 = 66
22 x 4 = 88
22 x 5 = 110
22 x 6 = 132
22 x 7 = 154
22 x 8 = 176
22 x 9 = 198
22 x 10 = 220
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

7. WAP to find greatest among three numbers using conditional operator.

```
import java.util.Scanner;

public class GreatestOfThreeUsingTernary {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter three numbers
        System.out.print("Enter the first number: ");
        int num1 = scanner.nextInt();

        System.out.print("Enter the second number: ");
        int num2 = scanner.nextInt();

        System.out.print("Enter the third number: ");
        int num3 = scanner.nextInt();

        // Determine the greatest number using nested ternary operators
        int greatest = (num1 >= num2) ?
                ((num1 >= num3) ? num1 : num3) :
                ((num2 >= num3) ? num2 : num3);

        // Output the result
        System.out.println("The greatest number is: " + greatest);

        // Close the scanner
        scanner.close();
```

```
    }
}
```

```
shikhasingh@Shikhas-MacBook-Air Assign1_stud %  /usr/bin/env /Users/shikhasingh/
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cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redh
gTernary
Enter the first number: 45
Enter the second number: 89
Enter the third number: 90
The greatest number is: 90
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

8. WAP to print odd numbers between 1 to 20.

```
public class OddNumbersBetween1And20 {

    public static void main(String[] args) {
        // Print odd numbers between 1 and 20
        System.out.println("Odd numbers between 1 and 20 are:");

        for (int i = 1; i <= 20; i++) {
            if (i % 2 != 0) { // Check if the number is odd
                System.out.println(i);
            }
        }
    }
}
```

```
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cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redhat.java/jdt_ws/Assign1_stud_e
nd20
Odd numbers between 1 and 20 are:
1
3
5
7
9
11
13
15
17
19
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

9. WAP to find whether a number is prime or not.

```
import java.util.Scanner;
```

```
public class PrimeNumberChecker {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter a number
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Check if the number is prime
        boolean isPrime = isPrime(number);

        // Output the result
        if (isPrime) {
            System.out.println(number + " is a prime number.");
        } else {
            System.out.println(number + " is not a prime number.");
        }

        // Close the scanner
        scanner.close();
    }

    // Method to check if a number is prime
    public static boolean isPrime(int num) {
        // Negative numbers, 0, and 1 are not prime
        if (num <= 1) {
            return false;
        }

        // Check for factors from 2 up to the square root of num
        for (int i = 2; i <= Math.sqrt(num); i++) {
            if (num % i == 0) {
                return false; // Not a prime number
            }
        }

        return true; // Prime number
    }
```

}

```
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s.java-extension-pack-jdk/java/latest/bin/java --enable-preview -XX:+ShowCodeDetailsInExc
cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redhat.java/j

Enter a number: 34
34 is not a prime number.
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```

10. Write a Java Program find out Students Grades using Switch Case

Score in subject	Grade
>=90	A
80-89	B
70-79	C
60-69	D
50-59	E
<50	F

```
import java.util.Scanner;

public class StudentGrade {

public static void main(String[] args) {

// Create a Scanner object for user input

Scanner scanner = new Scanner(System.in);

// Prompt the user to enter a score
```

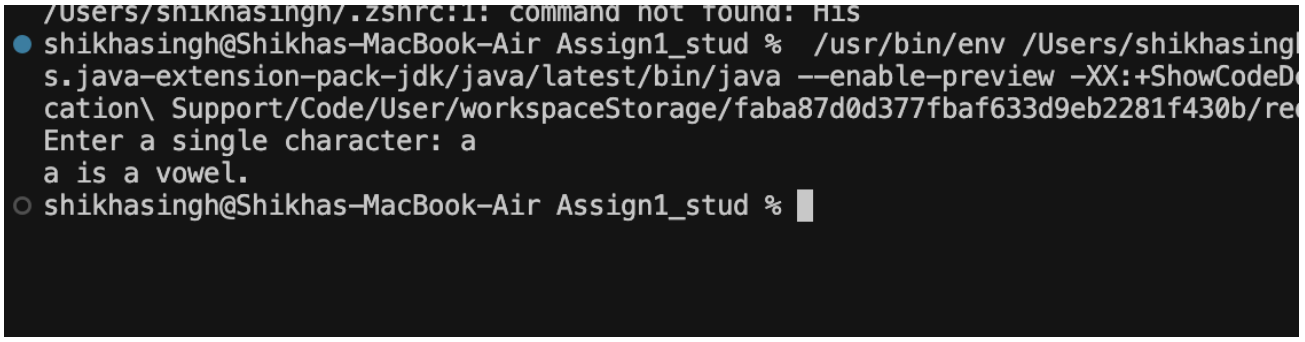
```
System.out.print("Enter the student's score (0-100): ");

int score = scanner.nextInt();


// Determine the grade using switch case

char grade;


// Validate the score range

if (score < 0 || score > 100) {

System.out.println("Invalid score. Please enter a score between 0 and 100.");

} else {

// Use a switch-case statement to determine the grade

switch (score / 10) {

case 10:

 case 9:

grade = 'A';

   break;

 case 8:

grade = 'B';

   break;

 case 7:
```

```
grade = 'C';
    break;
 case 6:
grade = 'D';
    break;
 case 5:
grade = 'E';
    break;
 default:
grade = 'F';
    break;
    }

// Output the result
System.out.println("The student's grade is: " + grade);
}

// Close the scanner
scanner.close();
}}
```

11. WAP to check whether the inputted character is Vowel or Consonant.

```
import java.util.Scanner;

public class VowelOrConsonant {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter a character
        System.out.print("Enter a single character: ");
        char ch = scanner.next().charAt(0); // Read the first character of the input

        // Check if the character is a letter
        if (Character.isLetter(ch)) {
            // Convert the character to lowercase for easier comparison
            char lowerCh = Character.toLowerCase(ch);

            // Determine if the character is a vowel or consonant
            switch (lowerCh) {
                case 'a':
                case 'e':
                case 'i':
                case 'o':
                case 'u':
                    System.out.println(ch + " is a vowel.");
                    break;
                default:
                    System.out.println(ch + " is a consonant.");
                    break;
            }
        } else {
```

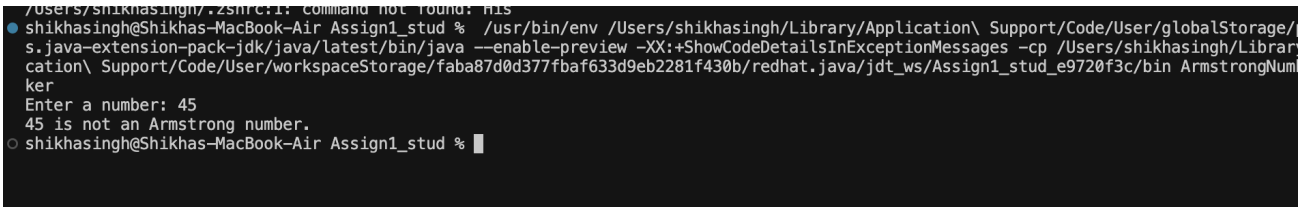
```
            System.out.println(ch + " is not a letter.");
        }

        // Close the scanner
        scanner.close();
    }
}
```



12. WAP to check whether the inputted number is Armstrong Number or not. (Hint: An Armstrong number is a positive m-digit number that is equal to the sum of the mth powers of their digits. It is also known as pluperfect, or Plus Perfect, or Narcissistic number. 153: 13 + 53 + 33 = 1 + 125+ 27 = 153 (An Armstrong Number),
125: 13 + 23 + 53 = 1 + 8 + 125 = 134 (Not an Armstrong Number)
Hint: use Math.pow(num1, num2) to calculate power

```
import java.util.Scanner;

public class ArmstrongNumberChecker {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter a number
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Check if the number is an Armstrong number
        if (isArmstrong(number)) {
            System.out.println(number + " is an Armstrong number.");
        } else {
            System.out.println(number + " is not an Armstrong number.");
        }
```

```
        // Close the scanner
        scanner.close();
    }

    // Method to check if a number is an Armstrong number
    public static boolean isArmstrong(int num) {
        // Convert the number to a string to easily get digits and count the number of digits
        String numStr = Integer.toString(num);
        int numberOfDigits = numStr.length();

        // Calculate the sum of digits raised to the power of the number of digits
        int sum = 0;
        int temp = num;

        while (temp > 0) {
            int digit = temp % 10;
            sum += Math.pow(digit, numberOfDigits);
            temp /= 10;
        }

        // Check if the sum is equal to the original number
        return sum == num;
    }
}
```



13. Write a program that generates a random number between 1 to 100 and asks the user to guess what the number is. If the user's guess is higher than the random number, the program should display "Too high, try again." If the user's guess is lower than the random number, the program should display "Too low, try again." The program should use a loop that repeats until the user correctly guesses the random number (Hint: use Math.random() for generating random number. Eg. number = (int) (Math.random() * 100) + 1;).

```
import java.util.Scanner;

public class NumberGuessingGame {
```

```
    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Generate a random number between 1 and 100
        int randomNumber = (int) (Math.random() * 100) + 1;

        // Initialize variables
        int userGuess = 0;
        int attempts = 0;

        System.out.println("Welcome to the Number Guessing Game!");
        System.out.println("I have selected a number between 1 and 100. Try to guess it!");

        // Loop until the user guesses the correct number
        while (userGuess != randomNumber) {
            // Prompt the user to enter a guess
            System.out.print("Enter your guess: ");
            userGuess = scanner.nextInt();
            attempts++;

            // Check if the guess is correct
            if (userGuess < randomNumber) {
                System.out.println("Too low, try again.");
            } else if (userGuess > randomNumber) {
                System.out.println("Too high, try again.");
            } else {
                        System.out.println("Congratulations! You guessed the number in " + attempts + "
     attempts.");
            }
        }

        // Close the scanner
        scanner.close();
    }
}
```

```
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shikhasingh@Shikhas-MacBook-Air Assign1_stud %  /usr/bin/env /Users/shikhasingh/Library/Application\ S
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cation\ Support/Code/User/workspaceStorage/faba87d0d377fbaf633d9eb2281f430b/redhat.java/jdt_ws/Assign1_

Welcome to the Number Guessing Game!
I have selected a number between 1 and 100. Try to guess it!
Enter your guess: 56
Too high, try again.
Enter your guess: 3
Too low, try again.
Enter your guess: 19
Too high, try again.
Enter your guess: 15
Too high, try again.
Enter your guess: 10
Too high, try again.
Enter your guess: 5
Too low, try again.
Enter your guess: 6
Congratulations! You guessed the number in 7 attempts.
shikhasingh@Shikhas-MacBook-Air Assign1_stud %
```
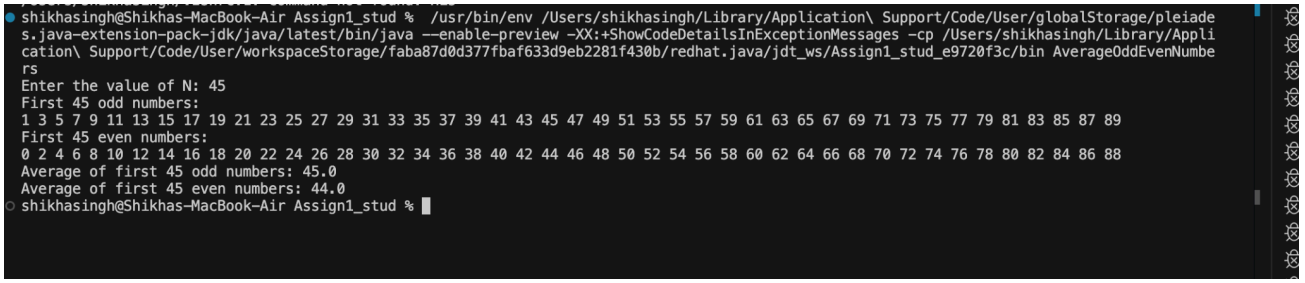

14. WAP to find average of consecutive N Odd numbers and even numbers.

```
import java.util.Scanner;

public class AverageOddEvenNumbers {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter the value of N
        System.out.print("Enter the value of N: ");
        int N = scanner.nextInt();

        // Calculate the sum of the first N odd numbers
        int oddSum = 0;
        int evenSum = 0;

        // Generate and sum the first N odd numbers
        System.out.println("First " + N + " odd numbers:");
        for (int i = 0; i < N; i++) {
            int oddNumber = 2 * i + 1;
            oddSum += oddNumber;
            System.out.print(oddNumber + " ");
        }
        System.out.println();
```

```
        // Generate and sum the first N even numbers
        System.out.println("First " + N + " even numbers:");
        for (int i = 0; i < N; i++) {
            int evenNumber = 2 * i;
            evenSum += evenNumber;
            System.out.print(evenNumber + " ");
        }
        System.out.println();

        // Calculate the average of odd and even numbers
        double oddAverage = (double) oddSum / N;
        double evenAverage = (double) evenSum / N;

        // Display the results
        System.out.println("Average of first " + N + " odd numbers: " +
oddAverage);
        System.out.println("Average of first " + N + " even numbers: " +
evenAverage);

        // Close the scanner
        scanner.close();
    }
}
```



15. WAP to reverse a positive number.

```
import java.util.Scanner;

public class ReverseNumber {

    public static void main(String[] args) {
        // Create a Scanner object for user input
        Scanner scanner = new Scanner(System.in);
```

```
        // Prompt the user to enter a positive number
        System.out.print("Enter a positive number: ");
        int number = scanner.nextInt();

        // Check if the number is positive
        if (number < 0) {
            System.out.println("Please enter a positive number.");
            scanner.close();
            return;
        }

        // Reverse the digits of the number
        int reversedNumber = 0;
        int originalNumber = number;

        while (originalNumber != 0) {
            int digit = originalNumber % 10; // Get the last digit
            reversedNumber = reversedNumber * 10 + digit; // Append digit to
reversed number
            originalNumber /= 10; // Remove the last digit from the original
number
        }

        // Display the reversed number
        System.out.println("Reversed number: " + reversedNumber);

        // Close the scanner
        scanner.close();
    }
}
```